DRAFT Attachment 2-WRD 10.06

Hazard Analysis Guidelines for Risk Factors 1-4

Awkward Posture

Department of Labor and Industries
WISHA Services Division

This document will assist inspectors in reviewing work sites where caution zone jobs have been identified. The inspector does not have to evaluate every job, but can use the following strategy for representative sampling. Inspectors will use Appendix B of the rule (WAC 296-62-05174) to evaluate whether there are hazard zone jobs. However, the employer has the option to use an analysis tool other than Appendix B. Some acceptable methods of alternate analysis are identified with each risk factor; in cases where the employer is relying upon either a listed alternative or another alternative, the inspector will need to request that an ergonomist assist them in these inspections.

This attachment contains the following sections to assist inspectors in making their determinations:

- Typical clues to recognize Awkward Posture
- Typical jobs where hazard zone risk factors for Awkward Posture are found
- Tips on measuring Awkward Posture
- Examples of acceptable methods of hazard analysis when using the general approach
- Typical controls chart
- Common questions for Awkward Posture

The caution zone criteria for Awkward Posture risk factors are:

- Working with the hand(s) above the head, or the elbow(s) above the shoulder, more than 2 hours total per day
- Working with the neck or back bent more than 30 degrees more than 2 hours total per day (without support and ability to vary posture)
- Squatting or kneeling more than 2 hours total per day

The hazard zone risk factors for Awkward Posture per Appendix B (WAC 296-62-05174) are:

- Shoulders -- working with the hands above the head or the elbows above the shoulder-more than 4 hours total per day. OR, repetitively raising the hands above the head or the elbows above the shoulder more than once per minute-more than 4 hours total per day.
- Neck -- working with the neck bent more than 45 degrees-more than 4 hours total per day. (Without support or ability to vary posture)
- Back -- working with the back bent forward more than 30 degrees-more than 4 hours total per day OR, working with the back bent forward more than 45 degrees-more than 2 hours total per day. (Without support or ability to vary posture)
- Knees -- Squatting or kneeling-more than 4 hours total per day.

Typical clues to recognize the risk factor: Awkward Posture

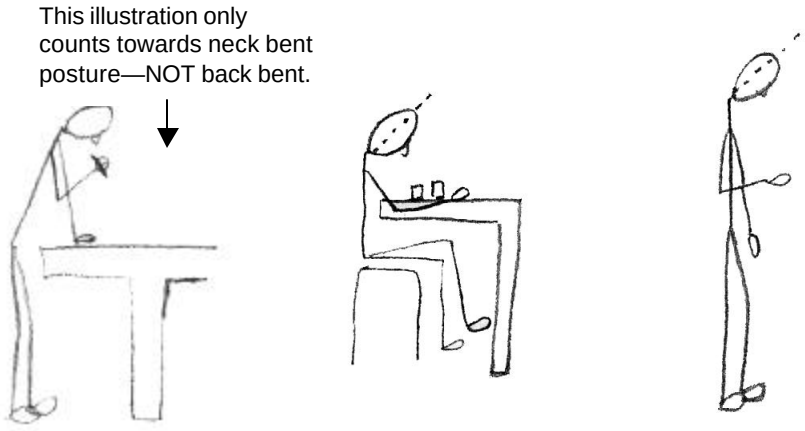
- The worker is "stuck" in poor position (in the designated awkward postures) for long periods of time
- The worker is hunched over
- The worker has to frequently reach overhead or move his/her elbows above shoulder height
- The worker has a lot of work that occurs at or near ground level

Clarification for Awkward Postures:

Forward bending of the neck and back are the only awkward postures of these body parts that the ergonomics rule addresses. The rule does not address side bending (lateral), twisting, or backward bending (extension), as distinct risk factors. Body positions involving the back, neck or arms while lying on the back are not covered by the rule.

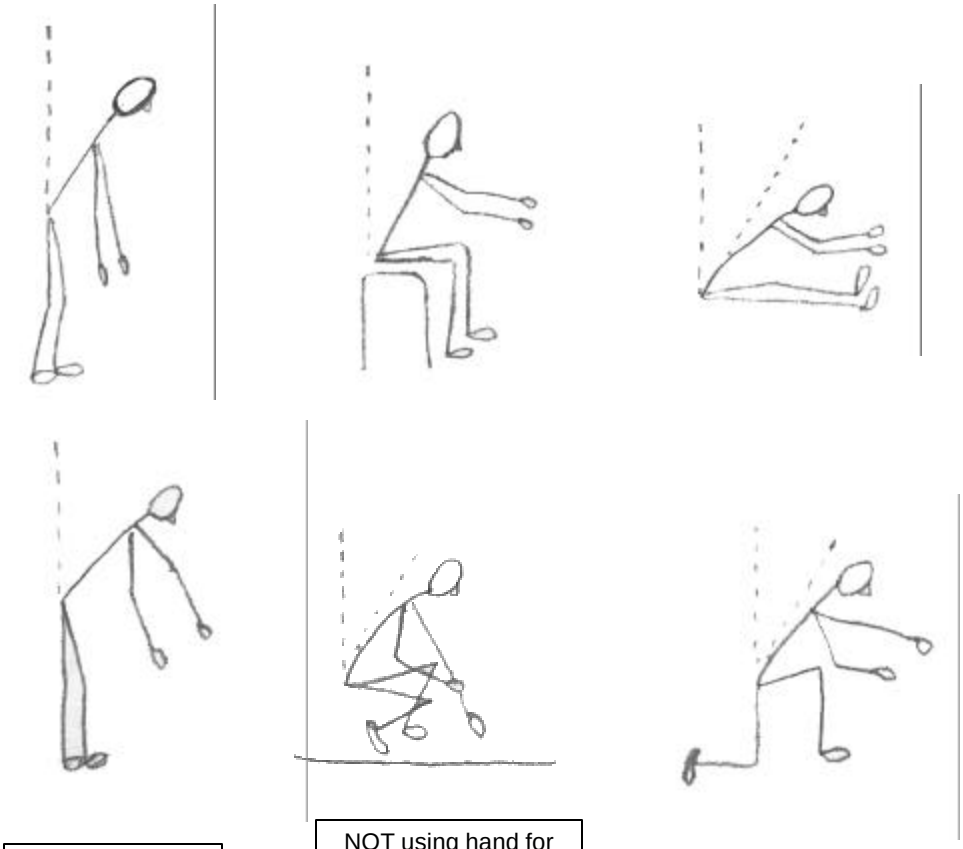
Neck Bending without support or the ability to vary posture: Neck bending is in reference to the trunk, regardless of what position the trunk is in (i.e., sitting, standing, bent over at the waist, etc.). Neck bending is not in reference to the floor. Therefore, someone who is bent a little more than 15 degrees at the neck and a little more than 15 degrees at the back is not covered as a caution zone job. To meet the CZJ criteria, awkward neck bending is defined as > 30^o bend of the neck with respect to the trunk for over 2 hours per day. To meet the hazard level, neck bending is > 45^o, for over 4 hours per day. W*ithout support or the ability to vary posture* means that the position of the work imposes the awkward posture on the person rather than it being a matter of the worker choosing to position him/herself in this way. (See Common Question (1) with more on this topic on later page.)

Illustrations showing neck bent 45^o:



Back Bending without support or the ability to vary posture: Back bending is measured in reference to vertical. Again, w*ithout support or the ability to vary posture* means that the position of the work imposes the awkward posture on the person rather than it being a matter of the worker choosing to position him/herself in this way.

Illustrations showing back bent 30^{o} or more:



(Back bent 45^{o})

NOT using hand for support

NOT awkward back posture but will be considered as a kneeling

Typical clues to recognize the risk factor: Squatting

A worker is squatting if his/her knees are bent > 45^{o} from the straight knee position and the feet are the primary weight bearing contact points with the floor/ground. A simple reference clue for squatting: anytime the knees are bent enough to project past the toes.

Guidance for counting exposure time while squatting:

Posture Possibilities	Count Exposure time for…
Squatting	Squatting
Back bent forward > 30^{o} while squatting	Back bent and squatting (count each separately)
Back bent forward > 30^{o} + squatting + 1 hand down for support	Squatting

Typical clues to recognize the risk factor: Kneeling

A worker is kneeling if he/she has one or both knees in contact with a horizontal or inclined surface (examples. ground, floor, roof). One or both knees must support a significant percentage of the person's body weight. Leaning forward while standing so that the knees contact a vertical surface would not be considered kneeling. (However, sitting in a "kneeling chair" would be considered kneeling.)

Guidance for counting exposure time while kneeling:

Posture Possibilities	Count Exposure time for…
Kneeling	Kneeling
Back bent over > 30^{o} while kneeling	Back bent and kneeling (count each separately)
Back bent over > 30^{o} + kneeling + 1 hand down for support	Kneeling
Crawling on all 4's	Kneeling

Guidance for measuring exposure time for sustained postures:

- Observe the worker to determine the cycle. Count the length of time that the worker is actually in the awkward posture for that cycle period. Determine how often the cycle is repeated per day or how often the task is done per day (whichever is more appropriate). Multiply the exposure time by the frequency to determine the cumulative exposure time that the worker would be in that awkward posture for the day. If using videotape, the time code on the tape or a stopwatch can be used, although this level of precision is often not needed. Often it will be obvious to recognize if the percentage or duration of time spent in a sustained posture is enough to reach the hazard level.

Guidance for measuring exposure time for repeated/frequent reaching above the head (or elbows above shoulder height):

- If the worker reaches overhead more than once per minute, that minute of activity is counted as one minute of exposure. The worker must exceed 4 hours of exposure for repeated reaching to be considered a hazard. Timing for this repetitive motion scenario is a special case, different than how highly repetitive motion is normally considered. A less rigorous repetition rate of at least two applies **if it is in combination** with repeated awkward arm lifts (raising hand(s) overhead or elbow(s) above shoulder height).

  For example: A hardware store worker stocking high shelves places items on the shelves. He has to stock items on the high shelves for about half of the 8-hour day. He places 3-5 items up on the shelf per minute. Even though the duration of time he has his hands in the awkward posture is very brief, the frequency of the reach combined with the amount of time he performs that part of the task per day puts him at the **hazard level** of exposure.

Definition of a cycle: a time interval during which a regularly occurring sequence of events is completed. It includes any additional time prior to the start of the next new sequence. It can be the time to complete a task with many elements or the time to complete a single operation in a repetitive task.

Examples:
Shorter length cycles: completing one assembly operation on an assembly line, a barista making one latte
Moderate length cycles: checking out one customer at a grocery store, pruning a single tree in an apple orchard
Longer length cycles: filling a large order for a warehouse distribution picking operation, stacking an entire pallet in a shipping department, painting one room of a house

Typical jobs where Awkward Posture CZJ/HZJ risk factors are often found:

Risk Factors	Typical Jobs
Hands above head or elbows above shoulder heights	• Painting ceilings • Pruning trees • Picking fruit off trees
Neck bent > 30^{o} forward direction only	• Microscope work • Lab work • Assembly or inspection work
Back bent > 30^{o} forward direction only	• Ground level work in construction • Housekeeping work in hotels
Squatting	• Picking crops • • Roofing work
Kneeling	• Similar tasks as for squatting • Carpet, tile, and floor installation

Tips on measuring the risk factors Awkward Posture:

Inspectors <u>are not expected</u> to use goniometers or protractors, although they can be used. For simpler tasks, inspectors can determine exposure time during real time observations. It may be helpful to videotape the more complicated/difficult tasks.

NOTE: Postural angles measured from photographs or video may not be accurate, depending on the camera angle.

Compare the observed posture of the worker with illustrations/pictures that depict the cut off points of at risk postures to decide if the worker's posture angle meets the hazard criteria.

Examples of a**cceptable methods of hazard analysis for Awkward Posture risk factors (acknowledged by the general performance approach allowed within the rule):**

- REBA: Rapid Entire Body Assessment
- RULA: Rapid Upper Limb Assessment
- UAW-GM Ergonomic Risk Factor Checklist

It is acceptable for an employer to have used any of these methods to assess awkward postures for the job in question. There may also be other assessment methods not listed here that would be acceptable. Inspectors-consultants will need to ask for the results of the assessments. Contact the ergonomists at Policy & Technical Services for assistance. Inspectors do not need to know how to do these assessments nor how to interpret them.

Typical Controls for Awkward Posture Chart:

Risk Factor	Typical Controls
Hands above head or Elbows above shoulder heights	• Use long handled tools or extensions to adapt existing tools • Stand on step stools, raised platforms or ladders • Place frequently used items at more accessible heights • Bring the work down and tilt it on its side for better access • Design reach distances for the shortest workers
Neck bent > 45^{o}	• Use document holders or slant boards/stands to tilt the item for easier viewing • Raise the items to a better work height (monitor risers), may also want to tilt objects to keep neck more upright • Use magnifiers when working with objects in hands in order to keep the arms and shoulders down
Back bent > 30^{o}	• Use long handled tools or extensions for items such as brushes for cleaning tubs, dustpans, etc. • Raise the placement of items to a more accessible work height • Use lift tables, fork lifts, etc. to raise boxes/pallets from floor level to a more accessible work height

Squatting	• Use small portable stools to sit on to do low height work • Place items at a higher position or raise the work surface using an adjustable height cart • Alternate between bending, sitting, kneeling and squatting
Kneeling	See squatting controls • Change the method or tool use to allow working at a higher work height

(Note: kneepads are not considered controls for kneeling because they do not alleviate the primary problem affecting the joint. They protect the skin by providing padding against hard or sharp surfaces. The internal pressure on the knee remains the same.)

Commonly asked questions for Awkward Posture:

(1) What is meant by "without the ability to vary posture" for neck or back bending?
This primarily has to do with long periods of time spent in a poor position. This is due to the demands of the task. Does the employee have to be in the awkward position in order to do the work? In other words, the work imposes the risk onto the employee.
Examples: microscope inspection work (neck) and rebar tying at floor level (back)

Just because a person may straighten up from an awkward neck/back position every now and then does not excuse the job from scrutiny nor relieve the need for further evaluation. The total cumulative time spent with the neck bent >45^{o} or with the back bent >30 ^{o} or >45 ^{o} are still of concern. An inspector will still need to find out if the total exposure time exceeds the hazard level for the day. Only the amount of time spent in the awkward posture counts towards the risk factor exposure time. The intermittent periods of time spent in neutral posture do not count towards the exposure time.

Moving into a worse position is not an acceptable way to vary posture. Bending forward more than 30^{o} should NOT be considered as the ability to vary posture.

- If the employee chooses a method to do the work that puts him/her in an awkward posture, this will not be considered as contributing to the risk (or towards the exposure limit) **if** the company has readily available controls to minimize the risk and the employee was trained on the proper use of the controls. In this case, the employer will not be cited for violation of the rule even if the employee's actions place him/her in a hazard zone.

- However, if the awkward posture exists because the company has not provided controls, the job could qualify as a hazardous job and the employer could then be cited. (This does not imply that the employer must purchase equipment for all employees or have a supply of the items in stock. The employer may need to purchase some equipment on an as needed basis to reduce worker exposure to risk factors.)

(2) If a person uses one or two hands for support while being bent over, is this still considered awkward back posture?

No. As long as the person uses a hand for additional support, it is not considered without support. WAC 296-62-05105 addresses back bending **without support** only.

Acceptable **with support** scenarios:

- A person using one or two hands for support while being bent over
- A person leaning forward onto a surface designed to support his/her chest